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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/935,692	08/24/2001	Hirosumi Suzuki	109676	9657

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EXAMINER	
JARRETT, SCOTT L	
ART UNIT	**PAPER NUMBER**
3623	

DATE MAILED: 04/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/935,692	SUZUKI ET AL.
	Examiner	**Art Unit**
	Scott L. Jarrett	3623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 February 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This **Final** office action is in response to Applicant's amendment filed February 17, 2006. Applicant's amendment amended claims 1-24 and added new claims 25-30. Currently claims 1-30 are pending.

Response to Amendment

2. The Objection to the Title is withdrawn in response to Applicant's amendment to the Title.

The Objection to Claim 12 is withdrawn in response to Applicant's amendment to Claim 12.

The Objection to the Drawings is withdrawn in response to Applicant's amendments to Figure 2.

Response to Arguments

3. Applicant's arguments filed February 17, 2006 have been fully considered but they are not persuasive.

Specifically Applicant's argue that the prior art of record "taken individually or in any combination fails to disclose or suggest the claimed computer implemented system, method or computer program product for drafting a supply plan/production plan including at least the feature of reiteratively changing a distribution parameter and a workforce parameter as disclosed."

Examiner respectfully disagrees, as cited in the first office action on the merits, dated November 17, 2005, Kintner et al. teach reiteratively (successively, multiple times, etc.) changing (optimizing) a plurality of supply plan parameters including but not limited to workforce parameters such as workforce size, mix, costs, demographics and the like (Column 3, Lines 25-46) in order to determine the optimal (i.e. minimal cost) supply plan.

More specifically Kintner et al. teach utilizing well known linear programming techniques/methods wherein such methods typically comprise "trial solutions are tested iteratively to reach a optimal solution to the linear equations that constitute the model." (Column 3, Lines 37-40).

Kintner et al. does not expressly teach that one of the plurality of iteratively adjusted supply plan parameters includes a distribution parameter as claimed.

Schroer et al. teach distributing the required supply volume (demand) to individual work/supply stations based on a distribution parameter (Column 1, Bullet 1, Page 86; Table 1, Figures 1-2) in an analogous art of drafting supply plan(s) for the purposes of reducing the cycle time to process/supply orders through the use of production leveling in which cycle times and takt times are compared/varied (Table 1, Column 1, Paragraph 2, Page 85).

It would have been obvious to one skilled in the art at the time of the invention that the system and method for optimizing the workforce composition for a plurality of workstations and across several production lines as taught by the combination of Kintner et al. and Giles et al. with its ability to iteratively (successively) change/adjust a plurality of supply plan parameters would have benefited from including a distribution parameter in the supply plan in view of the teachings of Schroer et al.; the resultant system/method enabling users to optimize the distribution of the required supply volume (demand) across each of the supply/work stations (e.g. production leveling, lowest cost) and further to reduce the cycle time to process/supply orders through the use of production leveling in which cycle times and takt times are compared/varied (Schroer et al.: Table 1, Column 1, Paragraph 2, Page 85).

Further it is noted that iteratively (successively, multiple times, in succession, etc.) adjusting (varying, changing, etc.) parameters is a common approach/step of nearly all optimization problems, which seek to determine the optimal set of parameter values out of a plurality of potential parameter values.

It is noted that the applicant did not challenge the officially noticed facts in the previous office action(s) therefore those statements as presented are herein after prior art. Specifically it has been established that it was old and well known in the art at the time of the invention:

- to apply/utilize planning constraint/ranges such as overtime and holidays (suppliable ranges; e.g. amount of overtime available, allowable, etc.; length and timing of holidays) wherein these workforce ranges/constraints identify acceptable and/or physical limits to the availability of a workforce and help to ensure a workforce plan does not exceed those limits (e.g. scheduling a resource/workforce element to work 25 hours in a single day);

- to update/regenerate production plans (supply plans) at regular predetermined intervals (e.g. it is common for manufacturing companies to "re-optimize" / "re-plan" on daily, monthly and/or yearly basis based on a plurality of factors including but not limited to the predictability/volatility of demand such re-planning enabling businesses to regularly/periodically ensure they are operating/producing optimally); and

- to calculate a sum by summing up individual components (e.g. if a business wishes to determine the total production for a given set of production lines they can simply add/sum up the production (output) for each of the individual production lines into a total).

Claim Objections

4. Claim 29 is objected to because of the following informalities: Claim 29 contains a grammatical error, "computer program produce" instead of the intended "computer program product". Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 28-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 28-30 recite the limitation "the personnel work force parameters" in Claims 1, 12 and 13 respectively. There is insufficient antecedent basis for this limitation in the claim.

Examiner interpreted claims to read "the ~~personnel~~ work force parameters" for the purposes of examination.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-23 and 25-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kintner et al., U.S. Patent No. 6,732,079, in view of Giles et al., Meeting customer demand through mixed-model manufacturing (1997) and further in view of Schroer et al., Continuous process improvement the Quick Step way (1998).

Regarding Claims 1, 12 and 13 Kintner et al. teach a method and system for determining the optimal (i.e. lowest cost) mix (balance, ratio, percentage, blend, combination, etc.) of different workforce types (full-time, contract, etc.) to meet demand (supply volume, work load forecast, workload requirement) in a manufacturing/production environment (Abstract; Column 2, Lines 23-55; Column 3, Lines 16-24)

More specifically Kintner et al. teach a method and system for drafting (creating, generating, simulating, estimating, forecasting, etc.) a supply plan ("minimum-cost plan to meet workforce requirements", Column 3, Lines 60-61) for producing (manufacturing, assembling, etc.) an article/service (material, part, component, resource, product, etc.) comprising:

- storing resource (unit supply) man-hour data: time required to supply the resource (article, service, etc.) per unit; workforce required to supply the resource per unit and work-force type (employee, temporary employee, contractor, etc.) cost per unit (Column 2, Lines 56-68; Column 4, Lines 41-68; Column 9, Lines 5-10; Tables 1-2);

- inputting a required supply volume (workload requirement, demand, etc.; Column 9, Lines 5-10 and 50-56; Tables 3-4);

- calculating the gross cost based on the work-force-type cost data (Table 10);

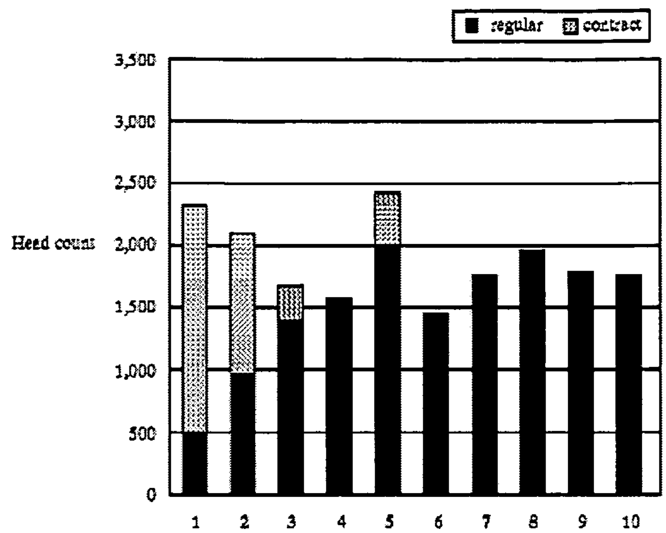
- reiteratively (successively, multiple times, etc.) changing (optimizing) workforce size and mix (linear programming; Column 3, Lines 25-46); and

- selecting a workforce size and mix corresponding to a minimum gross cost ("determine the low cost population combination of each type of worker to accomplish the work output for each period.", Column 3, Lines 16-24; Column 3, Lines 56-68).

TABLE 10-continued

Linear Programing Output for Specific Example

Optimal Staffing Plan



	Year	0	1	2	3	4	5	6	7	8	9	10
Contract Staff	Hire		1,750	26	—	—	415	—	—	—	—	—
	Terminate		—	—	600	205	—	249	—	—	—	—
	Quit		—	700	220	51	—	166	—	—	—	—
	Total	0	1,750	1,076	256	—	415	—	—	—	—	—
Total Staff		0	2250	2042	1659	1580	2406	1485	1794	1964	1811	1795
Total Costs ($M)	Hire	0	49	12	11	6	20	—	9	6	—	1
	Terminate	0	—	—	—	—	—	9	—	—	1	—
	Annual	0	191	148	91	77	138	74	90	101	97	100
	Total	0	240	160	102	83	158	83	99	107	98	101

Kintner et al. does not expressly teach that the production line comprises a plurality of supply stations or subsequently distributing the required supply volume to individual stations, calculating for a station the time (supply man-hour) required to supply, calculating the gross cost for the supply station or selecting a distribution parameter corresponding to a minimum gross cost as claimed.

Giles et al. teach a system and method for designing a supply/production production line comprising of a plurality of stations/stages, shifts and workers comprising:

- determining/setting required supply volume (designed daily rate = targeted monthly volume/# of workdays per month; Column 2, Paragraph 1, Page 83; Column 2, Paragraphs 2-3, Page 85); and

- calculating for a production line the time (supply man-hour) required to supply (process) the resource ("Efficiency of the Proposed Line", Page 83; Operational Cycle time, takt time, Column 2, Paragraphs 2-3, Page 83; Equations 1-3, Page 83; Column 2, Paragraphs 2-3, Page 85).

Giles et al. further teaches method's the ability to increase/decrease the number/size/role of a workforce on a particular line provides greater manufacturing flexibility (Column 1, Last Paragraph, Page 86; Column 2, Paragraph 1, Page 86).

More generally Giles et al. teach the well-known utilization of mixed model production lines (i.e. multiple products/articles on a single production/manufacturing line) and Demand Flow Manufacturing/Technology (Pages 82, 85).

It would have been obvious to one skilled in the art at the time of the invention that the method and system for determining the optimal size/mix of a production workforce as taught by Kintner et al. would have benefited from calculating operational cycle time (supply man hour) and costs for a plurality of supply/work stations across several production lines in view of the teachings of Giles et al.; the resultant

system/method enabling users to implement/provide flexibility in the production plan by changing/varying the number, mix/blend and/or role of workers on the plurality of workstations (Giles et al.: Column 1, Last Paragraph, Page 86; Column 2, Paragraph 1, Page 86).

Schroer et al. teach a method for optimizing production for a plurality of production lines (Column 1, Paragraph 4, Page 88) comprising a plurality of workstations comprising:

- distributing the required supply volume to individual station supply volumes based on a distribution parameter (production-leveling, takt time; Column 1, Bullet 1, Page 86; Table 1; Figures 1-2);

- calculating for a station the time (supply man-hour) required to supply (process) the resource based on the station's distributed supply volume (Column 1, Paragraphs 2-4, Page 87; Figure 2);

- calculating the gross cost for the supply station to supply the distributed supply volume based on the work-force cost data (Column 1, Paragraphs 2-4, Page 87; "Phase IV, Page 88); and

- changing/selecting the distribution parameter and workforce parameter (Phase VII, Page 88).

More generally Schroer et al. teach a method for reducing cycle/operation time in a plurality of production lines utilizing a plurality of techniques/approaches including but not limited to production-leveling through the comparison of cycle time and takt time

(takt time = available work time per day divided by the required demand in units per day; Table 1; Column 1, Bullet 1, Page 86).

It would have been obvious to one skilled in the art at the time of the invention that the system and method for optimizing the workforce composition for a plurality of workstations and across several production lines as taught by the combination of Kintner et al. and Giles et al. would have benefited from optimizing the distribution of the required supply volume (demand) across each of the supply/work stations (e.g. production leveling, lowest cost) in view of the teachings of Schroer et al.; the resultant system/method reducing the cycle time to process/supply orders through the use of production leveling in which cycle times and takt times are compared/varied (Schroer et al.: Table 1, Column 1, Paragraph 2, Page 85).

Regarding Claims 2 and 14 Kintner et al. teach changing/varying the workforce parameter within a plurality of constraints (i.e. suppliable ranges; maximum head count, maximum number of employees, etc.; Column 9, Lines 60-68; Column 10, Lines 1-10; Constraint 2, Column 15; Constraint 5, Column 16; Table 5).

Kintner et al. does not teach a distribution parameter or subsequently wherein changing/varying a work/supply station distribution parameter within a suppliable range as claimed.

Giles et al. teach the utilization of several suppliable ranges as system/method constraints as well as the ability to plan for production line/work stations that exceed those ranges (extra shifts, work hours, etc.; Column 1, Last Paragraph, Page 83).

It would have been obvious to one skilled in the art at the time of the invention that the system and method for optimizing the composition of a workforce on a production line as taught by Kintner et al. would have benefited from utilizing suppliable ranges/constraints generating the production plan in view of the teachings of Giles et al.; the resultant system/method enabling users to implement/provide flexibility in the production plan by changing/varying the number, mix/blend and role of workers on the plurality of workstations (Giles et al.: Column 1, Last Paragraph, Page 86; Column 2, Paragraph 1, Page 86).

Neither Kintner et al. nor Giles et al. teach a distribution parameter as claimed.

Schroer et al. teach distributing the required supply volume (demand) to individual work/supply stations based on a distribution parameter (Column 1, Bullet 1, Page 86; Table 1, Figures 1-2).

It would have been obvious to one skilled in the art at the time of the invention that the system and method for optimizing the workforce composition for a plurality of workstations and across several production lines as taught by the combination of Kintner et al. and Giles et al. would have benefited from optimizing the distribution of the

required supply volume (demand) across each of the supply/work stations (e.g. production leveling, lowest cost) in view of the teachings of Schroer et al.; the resultant system/method reducing the cycle time to process/supply orders through the use of production leveling in which cycle times and takt times are compared/varied (Schroer et al.: Table 1, Column 1, Paragraph 2, Page 85).

Regarding Claims 3 and 15 Kintner et al. teach a system and method for determining an optimal workforce composition/mix wherein:

- the workforce includes regular and irregular ranges (Column 9, Lines 60-68; Column 10, Lines 1-10; Constraint 2, Column 15; Constraint 5, Column 16; Table 5); and

- the work-force-type cost data includes regular and irregular cost data (Column 2, Lines 40-68; Column 4, Lines 42-68).

Kintner et al. does not teach workstation suppliable ranges as claimed.

Giles et al. teach the utilization of several suppliable ranges and the ability to enable the production/manufacturing to exceed those ranges (i.e. extra shits, extended working hours, etc.; Column 1, Last Paragraph, Page 83).

It would have been obvious to one skilled in the art at the time of the invention that the system and method for optimizing the composition of a workforce on a

production line as taught by Kintner et al. would have benefited from utilizing suppliable ranges/constraints generating the production plan in view of the teachings of Giles et al.; the resultant system/method enabling users to implement/provide flexibility in the production plan by changing/varying the number, mix/blend and role of workers on the plurality of workstations (Giles et al.: Column 1, Last Paragraph, Page 86; Column 2, Paragraph 1, Page 86).

Regarding Claims 4 and 16 Kintner et al. dos not expressly teach the use of that the irregular suppliable range includes overtime and holiday ranges as claimed.

Official notice is taken that applying/utilizing planning constraint/ranges such as overtime and holidays (suppliable ranges; e.g. amount of overtime available, allowable, etc.; length and timing of holidays) is old and very well known. These workforce ranges/constraints identify acceptable and/or physical limits to the availability of a workforce and help to ensure a workforce plan does not exceed those limits (e.g. scheduling a resource/workforce element to work 25 hours in a single day).

It would have been obvious to one skilled in the art at the time of the invention that the method and system for drafting a supply plan comprising an optimized mix of worker-types as taught by the combination of Kintner et al., Giles et al. and Schroer et al. would have benefited from taking into account overtime and holiday workforce parameters constraints (suppliable ranges) in view of the teachings of official notice; the

resultant system ensuring the production plan does not schedule/plan production outside of available ranges (e.g. over scheduling a worker).

Regarding Claims 5 and 18 Kintner et al. teach a system and method for determining an optimal workforce population mix wherein changing the workforce parameter includes changes to the ratio (mix) of work-force-types (Column 3, Lines 16-24 and 56-68; Column 4, Lines 1-7; Table 10).

Regarding Claims 6 and 19 Kintner et al. teach a system and method for determining an optimal workforce population mix wherein the work-force-types include regular employees and a plurality of temporary employees and the workforce parameter includes changes to the ratio/mix of regular and temporary (contract) employees (Column 3, Lines 16-24 and 56-68; Column 4, Lines 1-7; Table 10).

Regarding Claims 7 and 20 Kintner et al. teach changing/optimizing the mix of workforce-types in a production/manufacturing process however Kintner et al. does not expressly teach changing the workforce parameter at each of the supply stations as claimed.

Giles et al. teach optimizing the production of a material/production utilizing a plurality of work/supply stations wherein changes to a workforce parameter include changes to the workforce (e.g. size, role, type, etc.) as discussed above; wherein the

workforce parameter is varied in order to provide a flexible production plan (Column 1, Last Paragraph, Page 86; Column 2, Paragraph 1, Page 86).

It would have been obvious to one skilled in the art that the system and method for optimizing the composition of a production workforce as taught by Kintner et al. would have benefited from optimizing the distribution of supply volume to a plurality of workstations as well as varying the workforce composition (size, role, type) in view of the teachings of Giles et al.; the resultant system providing a flexible workforce/resource production plan through variations/optimization of the number/size, type and role of the workforce/resources (Giles et al.: Column 1, Last Paragraph, Page 86; Column 2, Paragraph 1, Page 86).

Regarding Claims 8 and 21 Kintner et al. teach a method and system for generating an optimal blended workforce wherein the workforce parameter changes include changes to a gross workforce in the supply stations that is within a workforce changeable range (maximum head count, maximum number of employees, etc.; Column 9, Lines 60-68; Column 10, Lines 1-10; Constraint 2, Column 15; Constraint 5, Column 16; Table 5).

Kintner et al. teach changing/varying the workforce parameter within a plurality of constraints (i.e. suppliable ranges; maximum head count, maximum number of employees, etc.; Column 9, Lines 60-68; Column 10, Lines 1-10; Constraint 2, Column 15; Constraint 5, Column 16; Table 5).

Kintner et al. does not teach that the production line comprises a plurality of work/supply stations or subsequently a changeable range for the supply stations as claimed.

Giles et al. teach the utilization of several suppliable ranges as system/method constraints as well as the ability to plan for production line/work stations that exceed those ranges (extra shifts, work hours, etc.; Column 1, Last Paragraph, Page 83).

It would have been obvious to one skilled in the art at the time of the invention that the system and method for optimizing the composition of a workforce on a production line as taught by Kintner et al. would have benefited from utilizing suppliable ranges/constraints generating the production plan in view of the teachings of Giles et al.; the resultant system/method enabling users to implement/provide flexibility in the production plan by changing/varying the number, mix/blend and role of workers on the plurality of workstations (Giles et al.: Column 1, Last Paragraph, Page 86; Column 2, Paragraph 1, Page 86).

Regarding Claims 9, 17 and 22 Kintner et al. teach changing/optimizing the workforce parameter for predetermined periods and/or selected planning horizons implicitly required the re-optimization of the workforce composition for each period/planning horizon (Column 3, Lines 60-68).

Kintner et al. does not expressly teach changing the workforce and/or distribution parameters at a predetermined interval as claimed.

Neither Kintner et al. nor Giles et al. teach a distribution parameter as claimed.

Schroer et al. teach distributing the required supply volume (demand) to individual work/supply stations based on a distribution parameter (Column 1, Bullet 1, Page 86; Table 1, Figures 1-2).

It would have been obvious to one skilled in the art at the time of the invention that the system and method for optimizing the workforce composition for a plurality of workstations and across several production lines as taught by the combination of Kintner et al. and Giles et al. would have benefited from optimizing the distribution of the required supply volume (demand) across each of the supply/work stations (e.g. production leveling, lowest cost) in view of the teachings of Schroer et al.; the resultant system/method reducing the cycle time to process/supply orders through the use of production leveling in which cycle times and takt times are compared/varied (Schroer et al.: Table 1, Column 1, Paragraph 2, Page 85).

Official notice that re-generating/updating production plans (supply plans) at regular predetermined intervals is old and well known. For example it is common for

manufacturing companies to "re-optimize" / "re-plan" on daily, monthly and/or yearly basis based on a plurality of factors including but not limited to the predictability/volatility of demand such re-planning enabling businesses to regularly/periodically ensure they are operating/producing optimally.

It would have been obvious to one skilled in the art at the time of the invention that the system and method for optimizing a blended workforce across a plurality of workstations in several production lines as taught by the combination of Kintner et al., Giles et al. and Schroer et al. would have benefited from periodically/regularly re-optimizing/re-planning the production plan in view of the teachings of official notice; the resultant system enabling businesses to regularly/periodically ensure they are operating/producing optimally.

Regarding Claims 10 and 11 Kintner et al. does not expressly teach that the production line comprises a plurality of supply stations as claimed.

Giles et al. teach a method for designing an optimal production line comprising of a plurality of work stations/stages wherein:

- the supply stations are production lines for production the resource (i.e. stations offer a predetermined service; Column 1, Page 82; Page 83); and

- unit supply data is the workforce and time required to produce a single article (Equations 1-3).

It would have been obvious to one skilled in the art at the time of the invention that the system and method for optimizing the composition of a production workforce as taught by Kintner et al. would have benefited from optimizing a production line comprising a plurality of supply stations in view of the teachings of Giles et al.; the resultant system/method enabling users to implement/provide flexibility in the production plan by changing/varying the number, mix/blend and role of workers on the plurality of workstations (Giles et al.: Column 1, Last Paragraph, Page 86; Column 2, Paragraph 1, Page 86).

Regarding Claim 23 Kintner et al. teach a system and method for drafting (creating, generating, simulation, estimating, etc.) a production plan for production an article in a plurality of product lines including a plurality of operating days comprising:

- allocating (distributing, assigning, etc.) a planned production volume to production lines (workload requirements, forecast; Column 2, Lines 24-55; Column 9, Lines 5-10; Table 3);

- calculating the number of workers (workforce) required for each production line based on the operating time (productivity; Table 10);

- calculating a personnel cost for each production line based on worker categories having different wages (e.g. regular vs. temporary employees; Column 3, Lines 16-24 and 56-68; Column 4, Lines 43-68); and

- calculating a minimum personnel cost while adjusting the number of workers for each worker category/type (Column 3, Lines 16-24 and 56-68; Columns 15-16).

Kintner et al. teach the generation an optimal-cost (lowest cost) blended workforce as discussed above (i.e. calculating a minimum personnel cost).

Kintner et al. does not expressly teach calculating an operating time (supply time, work time) for each production line corresponding to/based on a tact (takt) time as claimed.

Giles et al. teach calculating an operating time (supply time, work time) for each production line corresponding to/based on a tact (takt) time ("Efficiency of the Proposed Line", Page 83; Operational Cycle time, takt time, Column 2, Paragraphs 2-3, Page 83; Equations 1-3, Page 83; Column 2, Paragraphs 2-3, Page 85).

Giles et al. further teaches adjusting the (takt, pace) time and planned production volume allocated to each production line as discussed above.

It would have been obvious to one skilled in the art at the time of the invention that the system and method for optimizing the composition of a workforce in a production line as taught by Kintner et al. would have benefited from calculating an operating time (supply time, work time, etc.) for each production line corresponding to/based on a takt time in view of the teachings of Giles et al.; the resultant system/method enabling users to implement/provide flexibility in the production plan by

changing/varying the number, mix/blend and role of workers on the plurality of workstations (Giles et al.: Column 1, Last Paragraph, Page 86; Column 2, Paragraph 1, Page 86).

Neither Kintner et al. nor Giles et al. nor Schroer et al. teach calculating a gross personnel cost for all the production lines by summing up the cost of the individual production lines as claimed.

Official notice is taken that calculating a sum by summing up individual components is old and very well known. For example if a business wishes to determine the total production for a given set of production lines they can simply add/sum up the production (output) for each of the individual production lines into a total.

It would have been obvious to one skilled in the art at the time of the invention that the system and method for optimizing the composition of a workforce for a plurality of production lines comprising of a plurality of work/supply stations as taught by Kintner et al., Giles et al. and Schroer et al. would have benefited from calculating a gross personnel/workforce cost by summing up the personnel costs for each of the individual production lines in view of official notice; the resultant system providing businesses with the total personnel/workforce cost for the plurality of production lines.

Regarding Claims 25-27 Kintner et al. does not expressly teach that the plurality of supply stations constitute a plurality of production lines for producing different articles or services as claimed.

Giles et al. teach the well-known use of mixed-model production (manufacturing, assembly lines) wherein a plurality of supply stations in a single production line produce (assemble, supply, manufacture, etc.) a plurality of different articles or services (Column 1, Paragraphs 1-2, Page 82) in an analogous art of supply planning for the purposes of enabling the production/manufacturing facility meet changing customer demands (i.e. supply plan/production flexibility; Column 1, Paragraph 1, Page 82).

It would have been obvious to one skilled in the art at the time of the invention that the system and method for drafting a supply plan as taught by Kintner et al. would have been applied to well known manufacturing/production models/configurations including but not limited to the mixed-model production approach in view of the teachings of Giles et al.; the resultant system/method enabling the production/manufacturing facility meet changing customer demands (Giles et al.: Column 1, Paragraph 1, Page 82).

Regarding Claims 28-30 Kintner et al. teaches a system and method drafting a supply plan wherein the workforce parameters include regular full-time workers, part-time workers, contract workers (Column 1, Lines 22-43; Column 2, Lines 56-60) and cost data (regular wages, etc.; Column 2, Lines 60-68).

Kintner et al. does not expressly teach that the plurality of cost data includes overtime and holiday pay rates as claimed.

Giles et al. teaches the well-known practice of using extended hours and extended shifts to meet supply/production requirements/goals (Last Paragraph, Page 83).

It would have been obvious to one skilled in the art at the time of the invention that the system and method for drafting a supply plan as taught by Kintner et al. would have benefited from using extended hours (e.g. holidays, weekends, etc.) and extended shifts (e.g. overtime) in view of the teachings of Giles et al.; the resultant system/method further enabling businesses to meet supply/capacity requirements (Giles et al.: Last Paragraph, Column 1, Page 83).

Giles et al. does not expressly teach overtime or holiday pay rates as claimed.

Official notice is taken that utilizing overtime and/or holidays as part of a supply plan (including paying resources for overtime and holidays) is an old and very well known business practice which enables businesses to meet customer demands and/or further utilize/leverage their fixed manufacturing assets.

It would have been obvious to one skilled in the art at the time of the invention that the method and system for drafting a supply plan comprising an optimized mix of worker-types as taught by the combination of Kintner et al. and Giles et al. would have benefited from including overtime and holiday working times (e.g. extended shifts/hours) and subsequently overtime and holiday costs (pay rates) in view of the teachings of official notice; the resultant system further enabling businesses to leverage their fixed manufacturing assets and/or meet customer demand.

9. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kintner et al., U.S. Patent No. 6,732,079, in view of Giles et al., Meeting customer demand through mixed-model manufacturing (1997) and further in view of Schroer et al., Continuous process improvement the Quick Step way (1998) as applied to claims 1-23 and 25-30 above, and further in view of Kiritsis et al., Petri net techniques for process planning cost estimation.

Regarding Claim 24 Kintner et al. does not expressly teach calculating costs utilizing a Petri net model as claimed.

Kiritsis et al. teach cost estimation in manufacturing/production processes utilizing Petri net model (Process Planning Cost system, Process Planning Net) wherein "In order to determine the overall costs for feasible process plans, we take into account in our Petri net model of manufacturing process planning the costs caused by machine, setup and tool changing in addition to pure operation cost" (Abstract).

Kiritsis et al. further teaches that the Petri net model approach takes "into consideration processing alternatives" (e.g. different worker types; Abstract).

It would have been obvious to one skilled in the art at the time of the invention that the system and method for drafting a production plan as taught by the combination of Kintner et al., Giles et al. and Schroer et al. would have benefited from modeling (calculating, determining, estimating, etc.) production costs in view of the teachings of

Kiritsis et al.; the resultant system enabling users to account for costs based on processing alternatives (Kiritsis et al.: Abstract).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Gomersall et al.; U.S. Patent No. 3,703,725, teach a system and method for drafting a supply plan of an article or service comprising a plurality of supply stations capable of supplying the article or service.

- Dietrich et al., U.S. Patent No. 5,548,518, teach a system and method for drafting a supply plan wherein supply volume is distributed (allocated, assigned, etc.) to a plurality of supply stations using one or more distribution parameters.

- Costanza, John R., U.S. Patent No. 6,198,980, teaches a system and method for drafting a supply plan of an article of service in a plurality of supply stations capable

of supplying a plurality of articles or services, using well known Demand Flow techniques/methods, the system/method comprising: determining and allocation supply volume to a plurality of supply stations (distribution parameter), determining and storing a plurality of workforce parameters/data, balancing supply station workloads/times (resource balancing) and product synchronization ("Following the demand-at-capacity calculation, an operational-cycle-time (alternatively referred to as the takt time) is calculated. The operational-cycle-time is defined as the maximum amount of time in which a unit of product or a component for a unit of product must be produced by a process in order to ensure that the demand-at-capacity for that product at that process is satisfied. The takt time for each process can be balanced, resulting in a continuous mixed-model process flow, by adjusting the operating hours for the process (i.e., by placing additional resources in the process), relocating work, or redesigning product definition or process sequences so that the takt time for each process is approximately a constant. When the balancing is completed, the manufacturing line to accommodate the demand-at-capacity for each product in the family of products manufactured includes sequences of processes that produce to the takt time (i.e., all of the processes take approximately the same time to complete).", Column 3, Lines 46-68).

- Newmark, Larry J., U.S. Patent No. 6,631,305, teaches a system and method drafting a supply plan wherein the plan optimizes the supply plan utilizing well known Six Sigma, Lean Manufacturing and Kaizen techniques. Newmark further teaches that balancing assembly lines based on takt times is an old and well known method "used to

balance the work of the individual operations and thus optimize the overall flow and efficiency of the assembly line."

- Andrade et al., U.S. Patent Publication No. 2003/0109950, teach a system and method for drafting a supply plan wherein the plan optimally allocates/distributes production/supply volume in a multiple production line manufacturing environment.

- Deckro, Richard, Balancing Cycle Time and Workstations (1989), teaches a plurality of well known methods/techniques for drafting supply plans for a plurality of supply stations wherein supply volume/production time (e.g. cycle) time as well as the number of workstations is optimized. Deckro further teaches an improved method for optimizing/balancing the number of supply stations and cycle time simultaneously within predefined constraints.

- Faaland, Bruce et al., Assembly Line Balancing with Resource Dependent Task Times (1992) teach a method for drafting a supply plan for a plurality of supply stations wherein one or more workforce and supply distribution parameters are used to optimize (e.g. minimizing total cost) the supply plan by optimizing the allocation/assignment of resources (workers and/or equipment). Faaland further teaches the well known use and extensive research into paced production lines including the utilization of several well known approaches/strategies for increasing the paced production lines' production including but not limited to overtime, duplication supply stations/assembly lines, using subcontractors and the like.

- Raviv, Amnon, Applications of Queuing Theory and Simulation of Staffing in the Semiconductor Clean Room (1995) teaches a method for optimizing one or more workforce parameters as part of drafting a supply plan for one or more production lines.

- Ferrell, David S., Manufacturing Modeling and Optimization (1995) teaches Zavadkav, Emil et al., Self-buffering, Self-balancing, Self-Flushing Production Lines (1996) teach a method for drafting a supply plan by optimizing a plurality of workforce parameters.

- Zavadlav, Emil et al., Self-buffering, Self-balancing, Self-flushing Production Lines (1996) teaches several methods for drafting a supply chain comprising a plurality of supply stations in a plurality of production lines wherein the method optimizes a plurality of workforce and distribution parameters.

- Gel Esma Senturk, Stochastic models of workforce agility in production systems (1999) teaches a method for drafting a supply plan for one or more production lines.

- Just-in-Time for Operators (1998) teaches the well known method of drafting supply plans using a just-in-time production approach wherein the approach optimizes a plurality of workforce and distribution parameters for one or more production lines.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott L. Jarrett whose telephone number is (571) 272-7033. The examiner can normally be reached on Monday-Friday, 8:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hafiz Tariq can be reached on (571) 272-6729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SJ
4/12/2006

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